DOCUMENT RESUME

ED 162 464 EC 112 507

AUTHOR Cohen, Eli; Mosley, William J.
TITLE An Empirical Method for Validating Teacher Competencies for Competency Based Teacher Education Programs.
INSTITUTION Indiana Univ., Bloomington. Center for Innovation in Teaching the Handicapped.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE [77]
NOTE 10p.
AVAILABLE FROM Indiana University, Center for Innovation in Teaching the Handicapped, School of Education, Bloomington, Indiana 47401 ($1.00)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Cluster Grouping; *Handicapped Children; *Performance Based Teacher Education; *Performance Criteria; Questionnaires; *Skill Analysis; Teacher Attitudes; Teacher Education; *Teaching Skills

ABSTRACT

Described is an approach (developed by the Center for Innovation in Teaching the Handicapped) to resolving the following three performance based teacher education development issues: how to identify competencies; how to validate competencies; and how to assign competencies to modules. It is explained that competency lists must be acquired and compiled to form a competency statement; competencies must be rated in importance (via questionnaire) by experienced teachers; and competencies must be clustered (using empirical methods) according to data collected from teachers. (BD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED162464

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

AN EMPIRICAL METHOD FOR VALIDATING TEACHER COMPETENCIES FOR COMPETENCY BASED TEACHER EDUCATION PROGRAMS

Eli Cohen
William J. Mosley

OP10

EC112507

AN EMPIRICAL METHOD FOR VALIDATING TEACHER COMPETENCIES FOR COMPETENCY BASED TEACHER EDUCATION PROGRAMS

Eli Cohen

William J. Mosley

Comprehensive treatment has been given to several issues of CBTE, including (1) detailing the genesis of the movement and its recent developments (e.g., Gage & Winne, 1975; Joyce, 1971; Lindsey, 1973), (2) explicating its philosophical underpinnings (e.g., Elam, 1971), (3) exploring critical research issues (e.g., Health & Nielson, 1974; Turner, 1974), and (4) explaining how to implement CBTE (e.g., Semmel, Semmel, and Morrissey, 1976).

Less thorough attention has been given to the important problems of identifying competencies, and of allocating competencies to instructional modules.

Different researchers have used a variety of methods for identifying competencies, for program inclusion. Blackhurst (1974) suggests using professional judgement. Okey and Brown (1973) summarize four ways by which program developers identify competencies: (1) polling interested parties, (2) poaching from prepared lists, (3) observing how experienced teachers act, and (4) analyzing the act of teaching. Semmel, Semmel, and Morrissey (1976) examined 18 special education CBTE programs. Most (11) of these programs used expert opinion to identify competencies for program inclusion. One used a theoretical approach, one failed to indicate how competencies were identified, four used a poorly defined combination of expert opinion and empirical approaches, and only one (Special Education Curriculum Training Center, 1973) used an empirical approach. Semmel, et al., write that these selected programs typify such programmatic activities currently ongoing in special education. Thus it would appear that the field lacks a commonly accepted procedure for the selection of competencies for program inclusion.

Another problem in CBTE program development is the validation of competencies. There has been concern that competencies which are taught may be not relevant (Shores, Cegelka, & Nelson, 1973; Shores, Roberts, & Nelson, 1976). Strauch expresses the essence of this problem: "Competency selection and derivation is the most important endeavor in designing a program. The training modules or approaches and stated performance expectations are of minor importance if the initial competencies have no credibility at the outset." (Strauch, 1974, 74.)

In summary, the CBTE movement is in a state of rapid expansion. There is general agreement as to some features of CBTE such as instructional module development, precise and public statement of objectives, and specifications as to how objectives can be met (Elam, 1971). At the same time, there is comparatively little agreement concerning the important questions of (1) how to identify competencies, (2) how to validate competencies, and (3) how to assign competencies to modules. What follows is a description of an empirical method for identifying, validating, and grouping competencies for CBTE programs.

The AFTAC

The purpose of this paper is to describe an objective approach to resolving the CBTE development issues outlined above. This approach was developed by the writers and is called AFTAC for Assemble, Field Test, and Cluster. The AFTAC method is composed of three steps and represents an empirical approach to identifying, validating, and grouping competencies.[1]

Step 1: Assemble. The goal of step 1 is to identify existing appropriate competency statements. A large number of competencies for specific kinds

---

[1]AFTAC follows many of the suggestions put forth by Kettering, Rogers, Smith and Wainer (1976).

of CBTE programs already exist. Compiled lists of such competencies can be obtained from such institutions as colleges and universities, state departments of education, and research and development centers. The first step then is to acquire the competency lists from the above institutions, and to compile the competency statement. All competency statements are edited for succinctness. The resultant competency statements form the items of the competency assessment questionnaire.

Step 2: Field Test. The goal of step 2 is to discover the opinions of experienced teachers concerning the importance of the competencies which comprise the questionnaire.

For each item, teacher-respondents are asked to indicate the importance of the item, and where (i.e., undergraduate, in-service, etc.) they learned it. The sample of teachers is taken from the target population for the teacher training program, not the general population of teachers. For example, if the intent is to develop a CBTE program to prepare teachers of the mildly handicapped, the respondent sample should be composed of employed, experienced teachers of the mildly handicapped. Likewise, the sample should be specific to the geographical area of interest. If the teacher training program will serve the state of Georgia, the sample should be teachers in Georgia. There is no reason to believe that there is one best training program. AFTAC allows tailoring the training program for the specifics of the target school population, be it rural Alabama or inner city New York.

It is particularly important that the sample not be limited to recent graduates of any particular training program. Using only recent graduates would tend to inbreed opinions, and reduce the reported importance of competencies not included in the training program. Also it is important that the sample includes a large portion of experienced teachers, as well as of teachers

new to the profession.

Finally, to ensure greater reliability, it is desirable to use a large sample. The number of teachers sampled should be at least five times greater than the number of questionnaire items.

Step 3: Validate and Cluster. The purposes of AFTAC are to identify, validate, and group competencies. The method of identifying competencies is described in step 1. The validation process uses the data about these competencies which was obtained in step 2.

Specifically, the overall average importance rating of each competency (by the inservice teachers) can be considered a measure of competency validation. Those competencies which are generally judged to be unimportant for classroom use could be eliminated from program consideration, while those competencies which average high in importance could be considered for program inclusion.

Data about where the competencies were learned can be used to locate competencies not presently learned in college. The perceived effectiveness of the different educational opportunities can thus be evaluated.

There are various ways to cluster these validated competencies. The most prevalent method of grouping competencies is through an assertion that they logically "go together". A major problem with this procedure is that different people use logic to form the same competencies into different clusters. The logic seems to be more in the mind of the expert than inherent to the competencies.

The data obtained in step 2 can also be used to cluster the competencies by using the competency covariances. The means and variances are relatively independent. Items that are similar, or have common aspects, form clusters.

Empirical methods, which use the step 2 covariance data, can be employed

to suggest the clustering of competencies for the purposes of module development. Clustering the competencies in terms of their rated importance will group competencies which are perceived as similar (in terms of importance) into clusters. This procedure is limited in that while similarity in terms of importance is interesting, it is not the only basis for clustering. Other clustering criteria, such as opinions about where the competency should be taught, may yield different clustering schema. Also it should be recognized that the procedure only reflects the perceptions of different types of teachers. Some teacher differences, such as sex, age, or race, may divide one "logical" cluster into two or more. Obviously, the two need to be combined for purposes of module development. It should be clear then that clustering on the basis of covariance among competency importance scores should be taken only as a suggestion, and not a mandate, for module development.

Items can be clustered through the use of a variety of procedures. Cluster analysis is the most obvious method of analysis, but is not necessarily the preferred method. It is possible to use factor analysis to cluster items in a way useful for the purposes of module development.

There are a number of advantages to clustering by factor analysis instead of by cluster analysis. Using factor analysis an item can be assigned to more than one, or no cluster, as well as to only one cluster. Also the factor analysis procedure is less arbitrary than cluster analysis. Using factor analysis, the assignment of items to clusters (selecting items by factor weightings) is relatively stable over various rotational schema, and, for a limited range, even over the number of factors selected. A "polling" technique described by Cohen (1977) can be used to further assure stable assignment of competencies to clusters. In contrast, cluster analysis provides quite different clustering patterns for different clustering proximity equations, and for different numbers of clusters.

Conclusion

AFTAC provides several useful results. First, those items on which there was general agreement that they were unimportant can be located and deleted. These items have a low "importance" average. Second, those items which are generally perceived as important but which are not taught in school can be located. Teaching such competencies would make the CBTE program more responsive to the needs of teachers, as expressed by teachers in the field. One study (Mosley & Cohen, 1977) found that more than a third of the competencies which a set of teachers felt to be important were not learned in school. Third, the method also provides an empirical basis for allocating the competencies to instructional modules. Since the clusters are relatively unrelated and non-overlapping, the modules derived from the clusters should represent distinct learning opportunities.

The ultimate validation of competencies is through noting the effect they have on learner behavior. Such longitudinal research has not yet been completed. In the meantime, AFTAC can allow the researcher to proceed with the task of CBTE program development with a greater degree of confidence than is allowed by most present methods of competency selection.

REFERENCES

Blackhurst, E. A. Some Practical Considerations in Implementing Competency-Based Special Education Training Programs. In J. J. Creamer and J. T. Gilmore (Eds.), Design for Competence Based Education in Special Education, Division of Special Education and Rehabilitation, Syracuse University, Syracuse, N. Y.: 1974, 34-45.

Cohen, E. On the Nature of Jewish Identity: A Methodological Approach. Unpublished Doctoral Dissertation, Indiana University, 1977.

Elam, S. Performance-Based Teacher Education. Washington, D.C.: American Association of Colleges for Teacher Education, 1971.

Gage, N. L. and Winne, P. H. Performance-Based Teacher Education. In K. Ryan (Ed.), Teacher Education (vol. 74, pt. 2). Chicago: University of Chicago Press, 1975.

Heath, R. W. and Nielson, M. A. The Research Basis for Performance-Based Teacher Education. Review of Educational Research, 1974, 44, 463-484.

Joyce, B. R. The Promise of Performance (Competency)-Based Education: An Analytical Review of Literature and Experience. Final Report. New York: Columbia University, Teachers College, September, 1971.

Kettering, J. R., Rogers, W. H., Smith, M. E. and Warner, J. L. Cluster Analysis Applied to the Validation of Course Objectives. Journal of Educational Statistics, 1976, 1, 39-57.

Lindsey, M. Performance-Based Teacher Education: Examination of a Slogan. The Journal of Teacher Education, 1973, 24, 180-186.

Mosley, W. J. and Cohen, E. Teacher Education Competency Selection: The empirical use of teacher importance ratings. In preparation.

Okey, J. R. and Brown, J. L. Acquiring Teaching Competencies: Reports and Studies. National Center for the Development of Training Materials in Teacher Education, School of Education, Indiana University, Bloomington, Indiana: 1973, Report #4, 1-22.

Semmel, M. I., Semmel, D. S., and Morrissey, P. A. Competency-Based Teacher Education in Special Education: A Review of Research and Training Programs. Center for Innovation in Teaching the Handicapped, Indiana University, Bloomington, Indiana: 1976.

Shores, R. E., Cegelka, P. T., and Nelson, C. M. Competency Based Special Education Teacher Training, Exceptional Children, 1973, 40, 497-502.

Shores, R., Roberts, M., and Nelson, C. M. An Empirical Model for the Development of Competencies for Teachers of Children with Behavior Disorders. Behavior Disorders, 1976, 1, 123-132.

Strauch, J. D. Delineating, Training and Evaluating Particular Competencies in Special Education. In J. J. Creamer and J. T. Gilmore (Eds.), Design for Competence Based Education in Special Education, Division of Special Education and Rehabilitation, Syracuse University, Syracuse, N. Y.: 1974, 72-87.

Turner, R. L. Research Bases for Performance-Based Teacher Education Options. In J. J. Creamer and J. T. Gilmore (Eds.), Design for Competence Based Education in Special Education, Division of Special Education and Rehabilitation, Syracuse University, Syracuse, N. Y.: 1974, 167-184.